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Evaluation of mitral inflow velocity profile: Optimal through plane location for mitral inflow assessment with cardiac magnetic resonance (Article)

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Abstract

View references (30)

Background: Diastology is usually assessed using transthoracic echocardiography (TTE). Velocity?encoded phase? contrast imaging permits evaluation with cardiac magnetic resonance (CMR). Heterogeneous contour locations have been used to measure mitral (MV) inflow velocities and the optimal contour location is uncertain. We evaluated CMR MV inflow velocities against TTE to identify the optimal location. Methods: Revascularized acute myocardial infarction patients with normal left ventricular (LV) systolic function on TTE were assessed by 1.5T CMR. Early and late peak diastolic mitral inflow velocities were determined at 3 contour locations: (i) MV leaflet orifice, (ii) mid?MV inflow region, (iii) annulus and this was compared to TTE parameters of E/A ratio and deceleration times (DT). Results: Fourty?four patients were analysed. Mean LVEF was 59.8±9.3%. Peak E and A velocities underestimated by CMR, E/A ratio showed moderate correlation with TTE, R^2 values of 0.52 and 0.46 for leaflet and inflow contours respectively. Bland?Altman analysis showed the MV leaflet contour to have excellent agreement and the best reproducibility. Conclusion: CMR evaluation of mitral inflow velocities has good correlation with TTE. However, measurements vary significantly. The greatest correlation was with MV leaflet and weakest relationship with annulus contour.

Author keywords

Cardiac magnetic resonance Diastology Echocardiography

Indexed keywords

EMTREE medical terms: acute heart infarction adult aged article blood flow velocity cardiovascular magnetic resonance clinical article clinical assessment clinical evaluation controlled study deceleration diagnostic test accuracy study diastolic dysfunction female flow measurement heart left ventricle contraction heart left ventricle enddiastolic pressure heart left ventricle outflow tract heart muscle revascularization human male middle aged mitral valve mitral valve inflow velocity nuclear magnetic resonance scanner predictive value reproducibility sensitivity and specificity transthoracic echocardiography

Device tradename:

Magnetom Avanto, Siemens, Germany

Manufacturers: